



Important Information about Handling Manure from Previously PED Infected Barns

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The National Pork Board recently released research that confirms the need for vigilance this fall when handling manure from barns that have housed pigs infected with the Porcine Epidemic Diarrhea (PED) virus. The research, conducted by Steve Tousignant, DVM from the Swine Vet Center, St. Peer, MN, sought to find the infectivity of the manure. During the study they collected 20 mL of manure from 30 barns, 15 barns were 4 months and 15 barns were 6 months post PED infection. Using PCR to determine the presence of the virus, 13 of the barns 4 months post infection were positive for the PED as were 14 of the barns 6 months post infection.

Polymerase Chain Reaction (PCR) is a simple test that replicates a strand of DNA to identify bacteria and viruses. PCR identifies the genetic material but does not determine if the bacteria or virus is viable (able to transfer disease). To date, lab analysis has been an unreliable method of determining PED viability. The most reliable method has been to feed the suspect material to naive pigs in a bio-assay feeding trial and monitor the pigs for clinical signs.

In Tousignant's bio-assay feeding trail, 2 pigs responded with clinical signs of PED when fed manure from barns 4 months post infection while 0 pigs showed clinical signs when fed manure from the

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Feral Swine Study Pairs MSU and UM-Flint Researchers to Assess Statewide Impact

A new study will pair Michigan State University (MSU) researchers with researchers from the University of Michigan-Flint to learn more about one of the state's most potentially destructive invasive species: feral swine.

The approximately \$500,000 grant from the Michigan Department of Natural Resources (MDNR) also pulls in resources from the U.S. Department of Agriculture (USDA).

"To eradicate feral swine from Michigan, we need to develop a better understanding of their ecology—specifically, how they use and disperse through landscapes," said Gary Roloff, associate professor in the MSU Department of Fisheries and Wildlife.

He is co-leader on the grant with Robert Montgomery, also an assistant professor in the Department of Fisheries and Wildlife.

The study involves trapping and collaring up to 18 feral swine in the central Lower Peninsula to get a better idea of their hourly, daily and seasonal movements, and habitat use patterns in the state. Another aspect of the project is to quantify agricultural and environmental damage caused by feral swine.

...continued on page 4

...continued on page 2

Feral Swine Study...

...continued from page 1

This summer, researchers honed their trapping and collaring skills on a single feral swine. Roloff said that researchers were interested in testing the collaring process, the collar design and the fit of the collar on the swine. A large trapping effort to catch 17 to 18 more pigs will start in January 2015.

During the five-year project, MSU researchers will measure the location and extent of feral swine rooting activities (ecological and agricultural damage) and movement, develop a predictive model of how feral swine use habitat and evaluate the efficacy of techniques for controlling feral swine populations.

Researchers from the University of Michigan-Flint will monitor swine for the presence of diseases and parasites, as well as potential disease transmission routes from feral swine to wildlife, livestock and humans. Feral swine are known to carry diseases that could have negative consequences on Michigan's pork industry if they're transmitted from feral to domestic swine.

"Traditionally, the MDNR might look to universities to help assess a few aspects of species ecology to assist with management. However, given the potential for irreversible ecological impacts if feral swine become widespread throughout Michigan, we believed it was critical to gain extensive knowledge about them immediately to develop effective control strategies," said Dwayne Etter, MDNR wildlife biologist.

Roloff said feral swine have been observed statewide.

"By the end of 2011, feral swine were known to occur in 72 of the 83 counties in Michigan, and in areas with highly localized populations, they not only have negative impacts on crop production but also present a potential risk of spreading diseases to domestic swine, other livestock and wildlife," Roloff said. "Feral swine also pose significant threats to the state's wildlife. We are just beginning to understand the indirect impacts of feral swine on naturally occurring plant and animal communities."

Karmen Hollis, a wildlife epidemiologist at the University of Michigan-Flint, will focus on disease progression in feral swine and how diseases are transmitted from feral swine to livestock and some wildlife.

Roloff said that one of the main reasons for the Michigan research is that most of the information available on feral swine in the United States is based on Southern studies.

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"The feral swine in Michigan that are the focus of our research are the pure Russian boar breed. Hybrid swine tend to be more common in the South. Given the different breed, climate and environmental conditions in more northern latitudes, the MDNR believed it worthwhile to fund the study," Roloff said.

"We have several questions to answer that will ultimately help us control feral swine more efficiently," Roloff said.

Those questions include:

How do feral swine respond to severe winters? Do they move into denser cover, or do they move closer to domestic facilities, potentially increasing interactions with livestock?

Are there times of the year when groups might be particularly vulnerable to control?

"By working with landowners, farmers, the DNR, the USDA and one another, we will learn a lot more about this species," Roloff said.

Etter agreed and said that the universities will play a key role in helping eradicate feral swine from Michigan.

"Working collectively with multiple universities and the USDA ensures that we have a broad scope of skills and knowledge to address this critical threat to Michigan's natural resources," Etter said. "Given the elusiveness and reproductive potential of feral swine, the window of opportunity to eradicate them from Michigan is brief."

This work is also supported by the Michigan Pork Producers Association and the Michigan Involvement Committee of Safari Club International.

This article was originally published by Michigan State University Extension. For more information, visit <http://www.msue.msu.edu>

Checkoff News...

Think Safety First When Pumping Pits

Although it's not a common occurrence, even a few reports of flash fires and explosions in hog barns should serve as a good reminder that safety is paramount any time that liquid manure is being agitated and pumped from a holding pit.

As liquid manure undergoes slow decomposition in pits, it creates several gases including methane and hydrogen sulfide, both of which are flammable. The rate of gas release from the manure can be drastically increased when the manure is stirred during pumping. This increase is especially true for hydrogen sulfide, which can have a lethal paralyzing effect in addition to being flammable, notes Shawn Shouse, an Iowa State University (ISU) Extension area agricultural engineer.

Strict safety protocols, along with proper ventilation and agitation practices, can minimize the risk of flash fires and explosions during manure pumping as outlined in the Pork Checkoff's Safe Manure Removal Policies fact sheet located at www.pork.org. If you experience any foaming in a manure pit, be sure to contact the MSU Extension Pork Team for additional information and management tips.

Following these tips, offered by Pork Checkoff and ISU, can provide a good basis to improve manure-handling safety.

- Review your emergency action plan with all workers, and have emergency contact numbers available at the site. The Pork Checkoff's Pork Production Safety System, available at www.pork.org, offers tips on developing and implementing an emergency action plan. It also includes sections on hazardous gasses and fires.
- Prior to agitation or pumping, turn off electrical power to any non-ventilation equipment, and extinguish any pilot lights or other ignition sources in the building.
- Fully open all ventilation curtains or ventilation pivot-doors, but leave walk-in doors locked to prevent human entry.
- Run ventilation fans at maximum speed.
- Ensure that all people are out of the building and clearly tag all doors, noting that the building is unsafe for entry during agitation and pumping.
- Agitate the manure keeping the jet of pressurized

manure below the liquid surface. Don't let the jet of manure strike walls or columns in the pit.

- Stop agitation when the manure level does not allow agitation below the liquid surface.
- Continue maximum ventilation for thirty minutes after pumping has ended before re-entering the building.
- Never enter a building or manure storage structure when liquid manure is being agitated or pumped.

In case of fire...

If a fire breaks out at your facility, remember the acronym RACE:

Rescue those in immediate danger (ONLY IF YOU CAN DO SO SAFELY). **Announce** to others the need to evacuate. **Contain** the fire by closing doors and windows as you exit. **Evacuate** immediately. Go straight to the designated meeting spot upon evacuating the building so that your head-count leader will know that you have safely made it out of the building.

Don't Forget!

In anticipation of this flu season, the Pork Checkoff is reminding producers, farm personnel, veterinarians and others who have contact with pigs to get the seasonal flu vaccination as soon as possible to help protect human and pig health. The flu season can start as early as October and can last through May. "It's always wise for producers and swine farm workers to reduce the risk of getting sick and bringing influenza to the farm or workplace by getting vaccinated," said Dr. Lisa Becton, director of swine health information and research science and technology for the Pork Checkoff.

You can find more influenza related information at <http://www.pork.org/flu> or at www.cdc.gov/flu.





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In this issue...

- Handling Manure from PED Pigs
- Feral Swine Study
- Think Safety First When Pumping Pits

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...continued from page 1

barns 6 months post infection. As the sample size of pigs was small, the results are skewed toward a false negative. Thus, the 2 positive pigs are important findings and may be understated. This research is ongoing as Tousignant looks for factors that favored PED virus survival in manure.

Tousignant's work reaffirms the need for continued caution when hauling manure from storages that collect and store manure from barns that have housed PED infected pigs.

Tousignant provides the following insights for handling manure this fall:

- Haul manure from non-PED infected barns first.
- Haul manure from barns housing PED infected pigs in the reverse order that pigs broke with the disease. Haul manure from those barns that most recently housed pigs with active PED infection last.
- During manure removal establish a clear line

of separation between the manure handlers and barn workers. Under no circumstances should barn workers and manure haulers intermingle. All manure handlers must shower and change into clean cloths prior to entering the barn.

- Avoid spreading PED infected manure near other pig barns, either your own or your neighbor's, because the PED virus remains active for extended periods in stored manure and is a risk to other pigs.

This research is a reminder to everyone with barns that have housed pigs with active PED outbreaks to follow recommended biosecurity practices when hauling manure this fall.

Tousignant's research, and other PED resources, is available from the National Pork Board at: <http://www.pork.org/Research/4317/PEDVResearch.aspx>

An additional article discussing precautionary measures for measuring manure depth in deep pitted barns may be found at: http://msue.anr.msu.edu/news/measuring_manure_depth_in_the_pedv_era